



# New records of angiosperms from Espírito Santo, Brazil

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**Abstract:** This study aims to report six new occurrences of angiosperm species from the state of Espírito Santo, widening their geographic distribution. These floristic novelties evidence the presence of knowledge gaps regarding the flora and little collecting effort in Espírito Santo, in addition to demonstrating the floristic importance of Serra do Valentim, with restricted distribution species.

**Key words:** floristic, taxonomy, biogeography, distribution gaps

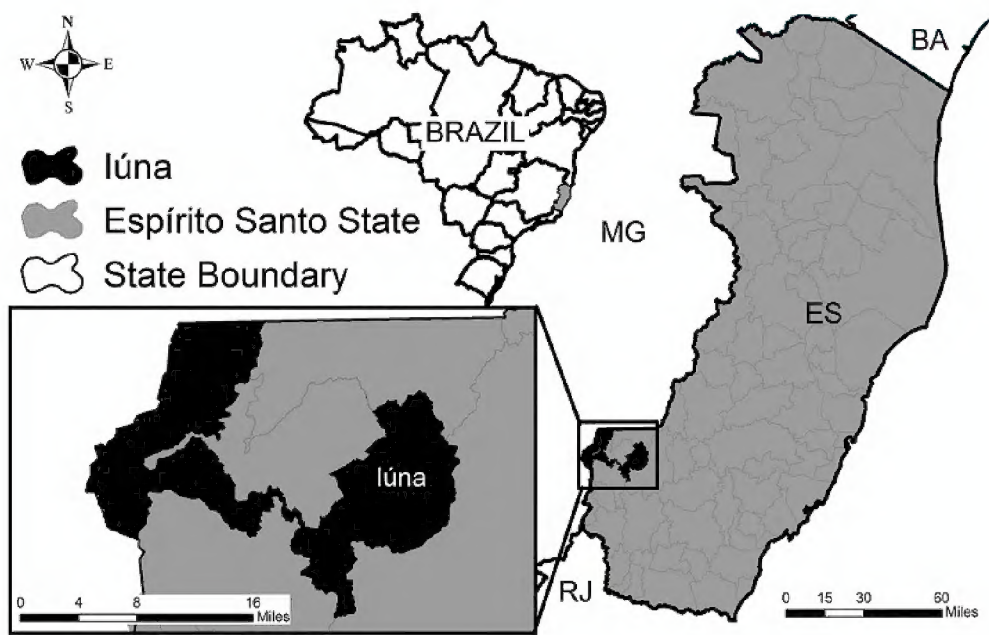
Alexander Curt Brade published in 1947 the first scientific contribution about the flora of Espírito Santo. This paper was a monograph on Lycophytes and Ferns. Subsequently, Ruschi (1986) published a checklist of Orchidaceae, revealing the overwhelming diversity of this family in the state. In the last five years, 18 new species to science were described in regional floras and taxonomic revisions based on collections from Espírito Santo. Some of these species are endemic to the state and known only for a few collections, such as *Vriesea euclidiana* Leme & G.K. Br. (Bromeliaceae; Leme et al. 2010), *Casearia espiritosantensis* R. Marquete & Mansano (Salicaceae; Marquete & Mansano 2010), *Dorstenia romaniucii* A. Ferreira & M. D. M. Vianna (Moraceae; Machado & Viana Filho 2012), *Tibouchina tedescoi* Meirelles, L. Kollmann & R. Goldenb. (Melastomataceae; Meirelles et al. 2012), *Leandra reptans* R. Goldenb. & Reginato (Melastomataceae; Goldenberg & Reginato 2013), *Leandra cristata* Reginato & R. Goldenb. and *Leandra fontanae* Reginato & R. Goldenb. (Melastomataceae; Reginato & Goldenberg 2013), *Markea atlantica* Stehmann & Giacomini (Solanaceae; Stehmann & Giacomini 2012), *Aristolochia subglobosa* J. Freitas, Lírio & F. González (Aristolochiaceae; Freitas et al. 2013), *Prepusa dibotrya* Fraga, A.P. Fontana & L. Kollmann (Gentianaceae; Fraga et al. 2014), *Eugenia amorimii* Fraga & Giaretta and *Eugenia sobraliana* Giaretta & Fraga (Myrtaceae; Giaretta & Fraga 2014). Nevertheless, the knowledge brought

by local floras also provided new insights about the plant richness of Espírito Santo.

Local floras for a wide geographical range of municipalities were produced in the last years. Floras of Begoniaceae (Kollmann 2006), Melastomataceae (Goldenberg & Reginato 2006) and Gesneriaceae (Rossini 2010) added important information on the flora of Santa Teresa. Bromeliaceae was investigated with greater emphasis in the southern Espírito Santo, resulting in checklists for Cachoeiro de Itapemirim (Krahl et al. 2012) and Mimoso do Sul (Couto et al. 2013). Arecaceae was studied at Linhares (Coelho 2010), in the urban area of Vila Velha (Valadares et al. 2012), and in the Biological Reserve of Duas Bocas (Cariacica municipality) by Lima and Soares (2003). Melastomataceae was also studied in the Pedra Azul State Park at Domingos Martins municipality (Meirelles & Goldenberg 2012). The species of Orchidaceae (Fraga & Peixoto 2004) and Sapotaceae (Fabris & Peixoto 2013) were monographed in “tabuleiro” forest. Chiron & Bolsanello (2011) published novelties for the genus *Acianthera*, and Chiron (2013) for the subfamily Epidendroideae (except for the tribe Maxillarieae) in the entire state.

Despite these valuable contributions, some regions such as the northeastern Espírito Santo and the Caparaó region, have received smaller attention in terms of floristic studies. This is a cause of concern, since these areas are under strong threat of suppression due to the expansion of agriculture and the extraction of ornamental rocks. This is the case of Serra do Valentim (Figure 1), that comprises the largest remnant of Atlantic Forest of Iúna municipality. Its vegetation was studied between the years 2011 and 2012 (Zorzanelli 2012) and supplemented by collections during the year of 2013. This inventory revealed six new occurrences for the Espírito Santo state: *Acalypha amblyodonta* (Müll. Arg.) Müll. Arg. (Euphorbiaceae), *Anthurium lucioi* Nadrusz (Araceae), *Cissus trianae* Planch. (Vitaceae), *Ocotea villosa* Kosterm. (Lauraceae), *Tovomitopsis paniculata* (Spreng.) Planch. & Triana, and *Velloziella dracocephaloides* (Vell.)





**Figure 1.** Map showing the location of Iúna Municipality, Espírito Santo state, Brazil.

Baill. (Orobanchaceae). Vouchers of these new records were incorporated to the VIES, HRCB and RB Herbaria (acronyms according to Holmgren et al. 1990). Specialized literature, including monographs and scientific articles were used to identify species. Subsequently, experts in the referred families confirmed their identification. Geographic distributions were checked by referring

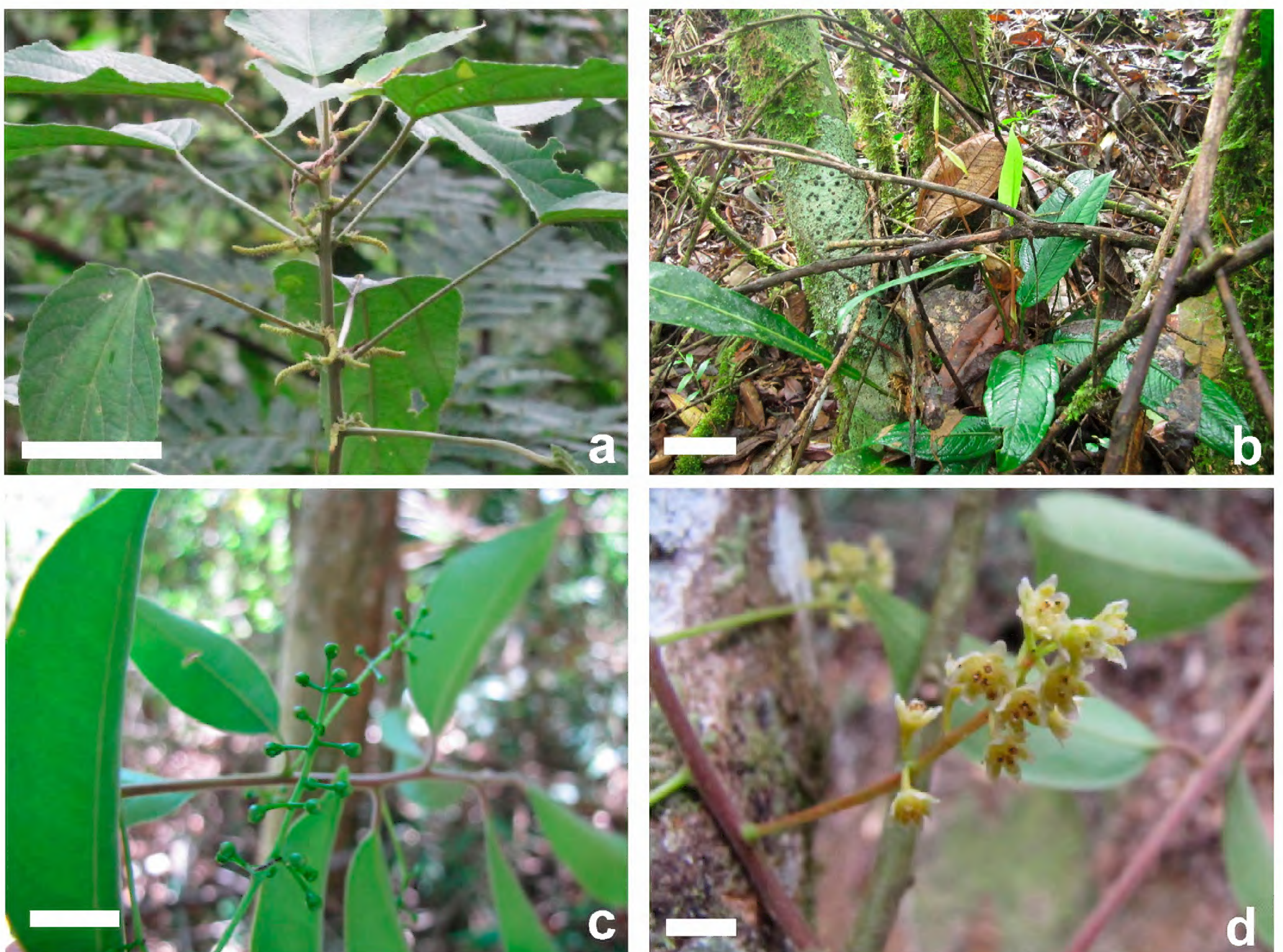
to scientific articles, monographs, and by the on-line, databases speciesLink and “Lista do Brasil” (Forzza et al. 2010). Descriptions followed the terms and concepts of Hickey and King (2002). The new records of angiosperms for Espírito Santo state are listed below.

***Acalypha amblyodonta*** (Müll.Arg.) Müll. Arg. in Mart., Fl. Bras. 11(2): 365. 1874. (Figure 2a).

Shrub 1–1.5 m; stems round covered with lanose hairs; leaves alternate, blades ovate covered with pannose hairs, base round, apex acute, margin serrate; inflorescence axillar raceme, pilose, espiciform and bisexual.

NOTES: *Acalypha amblyodonta* is a variable species. Lucena & Alves (2010) wrote that the four variants recognized by Müller (1874) in Flora Brasiliensis (i.e., *A. amblyodonta* var. *hispida*, *A. amblyodonta* var. *villosa*, *A. amblyodonta* var. *gaudichaudii* and *A. amblyodonta* var. *repanda*) occur in Minas Gerais and Rio de Janeiro States. Cardiel (2014), in “Lista de Espécies da Flora do Brasil”, expanded the distribution of the species for São Paulo, Paraná and Goiás states. An illustration of *A. amblyodonta* var. *villosa* is available in Müller (1874: pl. 53).

MATERIAL EXAMINED: Iúna, road for the Serra do



**Figure 2.** *Acalypha amblyodonta* (Müll.Arg.) Müll.Arg. **a)** General view of the inflorescence; *Anthurium lucioi* Nadr. **b)** Habit. *Ocotea villosa* Kosterm. **c)** Inflorescence with flowers on bud. **d)** Inflorescence and flowers. Scale bar: a) 7 cm, b) 8 cm, c) 4 cm, d) 1 cm.



Valentim, 20°20'16" S, 041°28'43" W, 20.II.2012, J.P.F. Zorzanelli 346 (VIES); Iúna, Serra do Valentim, 20°20'15" S, 041°28'43" W, 28.X. 2012, J.P.F. Zorzanelli 572 (VIES).

***Anthurium lucioi*** Nadruz in Rodriguésia (60) 4: 835. 2009. (Figure 2b)

Terrestrial herb; stem covered with cataphylls; leaves simple, alternate, margin entire, blade lanceolate, base obtuse, apex acuminate, slightly prominent veins in the lower face, lightly; spadix and spathe yellow-green.

NOTES: *Anthurium lucioi* is a very similar species to *A. bragae* Nadruz and *A. mareense* K.Krause. Coelho et al. (2009) present the main morphologic differences between the referred species, especially in the form of the leafstalk, veins and leaf blade. *A. lucioi*, according to the same authors, occurs in the high mountain forests of the Atlantic coast, in moist and shady locations. The occurrence of the species was known from the states of Minas Gerais and São Paulo (Coelho et al. 2014).

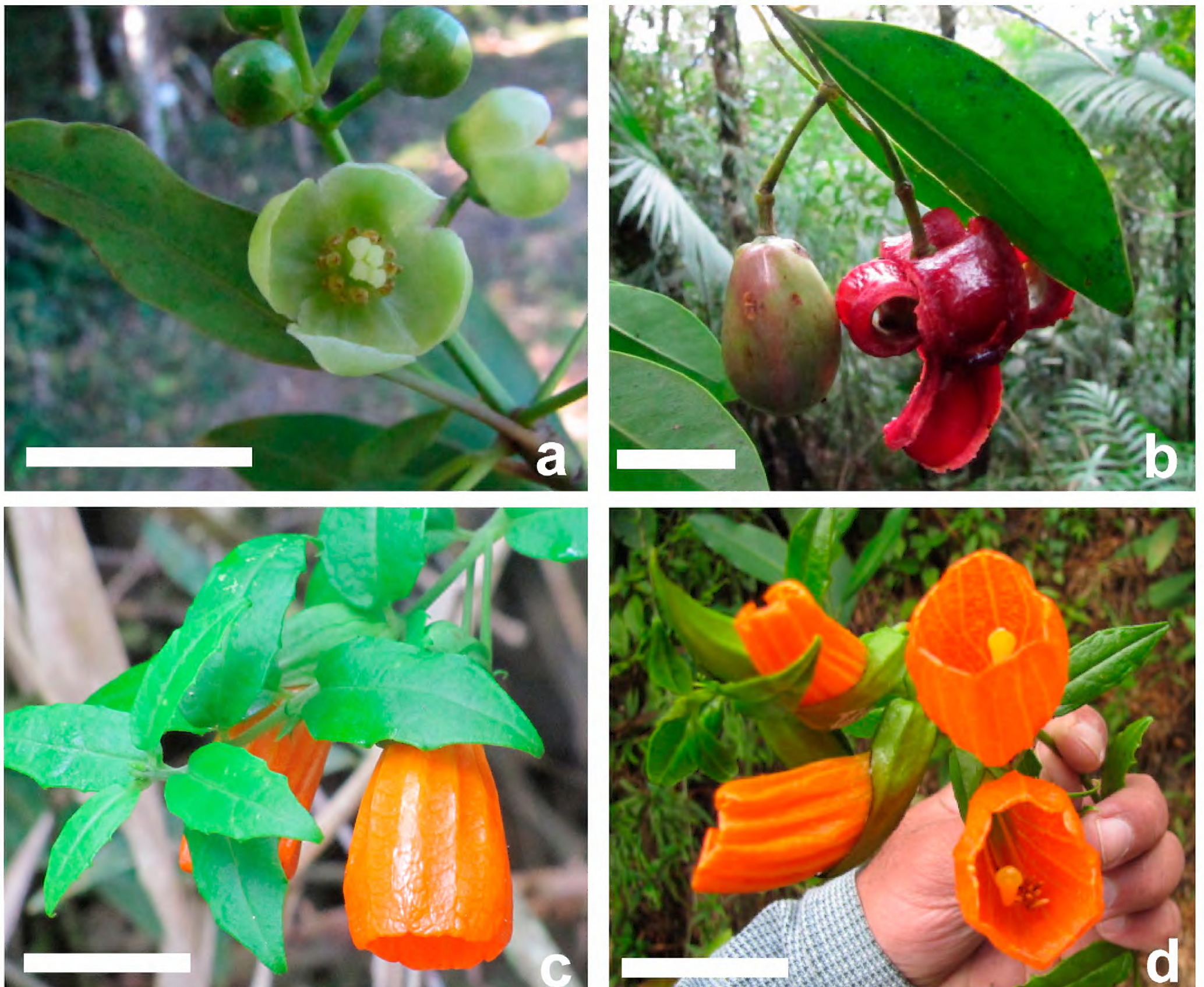
MATERIAL EXAMINED: Iúna, Serra do Valentim, 20°22'51" S, 041°28'00" W, 20.VI.2013, J.P.F. Zorzanelli 779 (VIES; RB).

***Cissus trianae*** Planch. in Monogr. Phan. 5(2): 555–556. 1887.

Liana, lenticelled stem, covered by sparsely puberulous indumentum; leaves trifoliate, alternate, blade lanceolate, base generally asymmetric, apex acuminate to mucronulate, margin slightly serrate; inflorescence umbellate, with greenish flower buds, flowers with short style; fruit green.

NOTES: *Cissus trianae* is a distinct species with uncommon characteristics in comparison to the trifoliate species of the same genus (Lombardi 2000). It has Neotropical disjunct distribution to the Atlantic coast. It was known in Brazil from the states of São Paulo and Rio de Janeiro according to Lombardi (2014).

MATERIAL EXAMINED: Iúna, Serra do Valentim, 20°23'08" S, 041°28'03" W, 30.V.2013, J.P.F. Zorzanelli 700 (VIES; HRCB).



**Figure 3.** *Tovomitopsis paniculata* (Spreng.) Planch. & Triana **a**) Flower in detail. **b**) Fruit in detail. *Velloziella dracocephaloides* (Vell.) Baill. **c–d**) Flowers in detail. Scale bar: a) 4 cm, b) 3 cm, c) 3.5 cm, d) 3.5 cm.



***Ocotea villosa*** Kosterm. in Bibliogr. Laurac. 1151. 1964. (Figure 2c and 2d)

Shrub to tree 2.5–6 m; stem with villous indumentum, more evident in younger branches; leaves simple, alternate, with villous hair in the lower face and bald in the upper face, blade oval, elliptical or oval, base obtuse, apex cuspidate; inflorescence raceme cauliflorous.

NOTES: *Ocotea villosa* was known from States of Rio de Janeiro and São Paulo (Quinet et al. 2014).

MATERIAL EXAMINED: Iúna, Serra do Valentim, 20°22'30" S, 041°28'28" W, 14.VIII.2011, J.P.F. Zorzanelli 67 (VIES; RB); 20°21'55" S, 041°28'26" W, 03.IX.2011, J.P.F. Zorzanelli 95 (VIES; RB).

***Tovomitopsis paniculata*** (Spreng.) Planch. & Triana in Annales des Sciences Naturelles; Botanique, série 4 14: 262. 1860. (Figures 3a and 3b)

Shrub to tree with yellow-green exudation; stem glabrous; leaves opposite, blades elyptic to lanceolate, margin entire, base and apex acuminate; bracteoles oval-triangular, apex acute; flowers 4-merous, showy; capsule with exposed seed and fixed when opened.

NOTES: *Tovomitopsis paniculata* is a species endemic to Brazil with known distribution for the states of Minas Gerais, Rio de Janeiro and São Paulo (Bittrich et al. 2014).

MATERIAL EXAMINED: Iúna, Serra do Valentim, 20°21'53" S, 041°28'23" W, 19.I.2012, J.P.F. Zorzanelli 289 (VIES); 20°22'07" S, 041°28'38" W, 23.IV.2011, J.P.F. Zorzanelli 4 (VIES); 20°21'53" S, 041°28'23" W, 11.XII.2011, J.P.F. Zorzanelli 224 (VIES).

***Velloziella dracocephaloides*** (Vell.) Baill. in Mart., Fl. Bras. 8(2): 404–405. 1897. (Figures 3c and 3d)

Liana, stem quadrangular with hirsute hairs; leaves lanceolate, subopposed to opposed, blade with base slightly attenuated, apex truncate, margin short-spinous, with sparsely distributed scabrous hairs on the veins of lower face; inflorescence as a single axillary flower.

NOTES: Souza and Giuletta (2009) inform that *V. dracocephaloides* was collected only in the States of São Paulo and Rio de Janeiro. Souza (2014) expands its distribution to Minas Gerais.

MATERIAL EXAMINED: Iúna, Serra do Valentim, 20°22'49" S, 041°28'03" W, 16.IX.2011, J.P.F. Zorzanelli 123 (VIES).

*Acalypha amblyodonta* is a species with wide geographic distribution and occurs in states adjacent to Espírito Santo, as well as in Argentina (Lucena & Alves 2010). The previous lack of records for this species from Espírito Santo may be explained by the scarceness of field efforts in various regions of the state. *Velloziella dracocephaloides* and *A. lucioi* (Souza & Giuletta 2009; Coelho et al. 2009) are species with restricted distributions to Minas Gerais, Rio de Janeiro and São Paulo states and Minas Gerais

and São Paulo states, respectively. This may result from specificity for habitats with environmental limitations, or preferences of these species for preserved areas. *Cissus trianae* has a Neotropical distribution, disjunctly occurring between the set of Andine formations and Central America and the Brazilian Atlantic coast (Lombardi 2000). In Brazil, its distribution is restricted to states of Espírito Santo, Rio de Janeiro and São Paulo. These new records indicate the importance of floristic studies not only in the Atlantic Forest remnant of Serra do Valentim, but also in the biome as a whole. The local floras should be stimulated and collection efforts in remnants located in private properties should be intensified. Information of this nature will broaden the understanding regarding the geographic distribution and preservation status of various species as well as provide refined data bases of the Brazilian flora.

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